OFFICE OF INSPECTOR GENERAL

AUDIT OF USAID/ANGOLA'S PROCUREMENT AND DISTRIBUTION OF COMMODITIES UNDER THE PRESIDENT'S MALARIA INITIATIVE

AUDIT REPORT NO. 4-654-10-001-P
DECEMBER 21, 2009

PRETORIA, SOUTH AFRICA

Office of Inspector General

December 21, 2009

MEMORANDUM

TO: USAID/Angola Director, Randall Peterson

FROM: Regional Inspector General, Nathan S. Lokos /s/

SUBJECT: Audit of USAID/Angola's Procurement and Distribution of Commodities Under the President's Malaria Initiative (Report No. 4-654-10-001-P)

This memorandum transmits our report on the subject audit. In finalizing this report, we considered management comments on the draft report and have included those comments in their entirety, as appendix II.

The report includes eight recommendations to strengthen USAID/Angola's procurement and distribution of commodities under the President's Malaria Initiative. Management decisions have been reached on all eight recommendations, and final action has been taken on recommendations 7 and 8.

Please provide USAID's Office of Audit, Performance, and Compliance Division (M/CFO/APC) with the necessary documentation demonstrating that final action has been taken on recommendations 1 through 6.

Thank you for the cooperation and courtesy extended to my staff during the audit.

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SUMMARY OF RESULTS

Angola was one of the first three countries selected for assistance through the President's Malaria Initiative (PMI). The goal of PMI is to reduce malaria-related mortality by 50 percent by the end of 2010. The initiative intends to reach 85 percent coverage of the most vulnerable groups—children under age 5 and pregnant women—with proven preventive and therapeutic interventions, including artemisinin-based combination therapies, insecticide-treated nets, intermittent preventive treatment of pregnant women, and indoor residual spraying. To accomplish the goals, USAID/Angola, in consultation with the Angolan National Malaria Control Program and with participation of national and international partners, is working to facilitate the purchase and distribution of these commodities in Angola. USAID/Angola's fiscal year (FY) 2008 funding for PMI totaled $19 million, of which 51 percent was for the purchase of commodities, in grants to and cooperative agreements with implementing partners, including the United Nations Children's Fund, Management Sciences for Health, John Snow, Inc., and others. In turn, these organizations provide services to the Angolan Ministry of Health. PMI started in Angola in 2005 and is expected to end in 2010 (page 3).

USAID/Angola's procurement and distribution of commodities is contributing toward the program goals. However, the mission's inability to track its progress toward achieving the PMI goal of reducing malaria mortality, due to a delay in the release of the multi-indicator cluster survey by the Government of Angola, limits its ability to manage the program properly. In addition, the persistent diversion of PMI commodities also constrains the effectiveness of the program (page 4).

In regard to the mission's contribution, the audit determined that the commodities financed by USAID were reaching the intended beneficiaries, including those at some of the remotest health facilities in the country. These commodities included millions of malaria treatment drugs, hundreds of thousands of rapid diagnostic test kits for diagnosing malaria, as well as hundreds of thousands of insecticide-treated mosquito nets, in FY 2008 alone (page 4).

Despite these accomplishments, USAID/Angola is not tracking its progress effectively toward achieving the highest PMI goal of reducing malaria mortality in Angola. In addition, the persistent diversion of PMI commodities—over $650,000 lost since January 2008—has limited the effectiveness of the program. Also, a potential overstatement of the incidence of malaria in Angola, due to issues with diagnosis, may cloud the impact of the PMI program on Angola's malaria-related mortality rate (pages 5–14).

To address these problems, the audit recommends that USAID/Angola

- Develop and implement a plan to track progress toward meeting its PMI impact indicators.
- Formalize its agreement with the Government of Angola to clearly define responsibilities and accountability over PMI commodities.

- Recover the value already lost; reassess the policy of assigning the storage and distribution of PMI commodities to the Government of Angola.
- Determine the impact of the overstated cases of malaria on its reporting on achievement of targets for PMI goals and intermediate results.
- Use accurate baseline and results data to report on the impact of its PMI activities on the malaria mortality and morbidity rate in Angola (pages 7–14).

BACKGROUND

Angola was one of the first three countries selected to receive assistance through the President's Malaria Initiative (PMI). The goal of PMI is to reduce malaria-related mortality by 50 percent by the end of 2010. The initiative intends to reach 85 percent coverage of the most vulnerable groups—children under age 5 and pregnant women—with proven preventive and therapeutic interventions, including artemisinin-based combination therapies, insecticide-treated nets, intermittent preventive treatment of pregnant women, and indoor residual spraying.

To extend these proven interventions to 85 percent of the most vulnerable groups, USAID/Angola, in consultation with the Angolan National Malaria Control Program and with participation of national and international partners, is working to

- Facilitate the purchase of artemisinin-based combination therapy drugs, rapid diagnostic test kits, and insecticide-treated mosquito nets.
- Increase the number of insecticide-treated nets distributed or sold.
- Increase the number of houses sprayed with indoor residual spraying.
- Reduce the number of U.S. Government-assisted service delivery points experiencing stockouts of specific malaria/artemisinin-based combination tracer drugs.

USAID/Angola's fiscal year (FY) 2008 funding for PMI totaled $19 million, of which 51 percent was for the purchase of commodities, in grants to and cooperative agreements with implementing partners, including the United Nations Children's Fund, Management Sciences for Health, John Snow, Inc., and others, who in turn provide services to the Angolan Ministry of Health. PMI started in Angola in 2005 and is expected to end in 2010.

AUDIT OBJECTIVE

As an addition to its FY 2009 audit plan, the Office of Inspector General performed this audit to answer the following question:

- Are USAID/Angola's procurement and distribution of commodities under the President's Malaria Initiative achieving their main goals of reaching 85 percent coverage both of children under age 5 and pregnant women with proven preventive and therapeutic malaria interventions?

Appendix I contains a discussion of the audit's scope and methodology.

AUDIT FINDINGS

Are USAID/Angola's procurement and distribution of commodities under the President's Malaria Initiative achieving their main goals of reaching 85 percent coverage of both children under age 5 and pregnant women with proven preventive and therapeutic malaria interventions?

USAID/Angola's procurement and distribution of commodities is contributing toward the program goals. However, the mission's inability to track its progress toward achieving the President's Malaria Initiative (PMI) goal of reducing malaria mortality limits its ability to properly manage the program. In addition, the persistent diversion of PMI commodities constrains the effectiveness of the program.

With respect to the commodities, except for the diversions mentioned above, the audit determined that the commodities financed by USAID were reaching the intended beneficiaries, including those at some of the remotest health facilities in the country. Several of the mission's other key accomplishments in fiscal year (FY) 2008 are presented in the following table.

Table 1. USAID/Angola Achievement of Selected FY 2008 PMI Targets

Indicator	Target	Actual[1]	Achieved
Artemisinin-based combination therapy drugs (ACTs) purchased with USG[2] support	3,500,000	4,480,376	128%
Number of USG-assisted service delivery points experiencing stockouts of specific malaria/ACT tracer drugs[3]	10	0	> 100%
Rapid diagnostic test (RDT) kits purchased through USG support	750,000	750,000	100%
Insecticide-treated mosquito nets (ITNs) purchased with USG support	593,848	413,598	70%
ITNs distributed or sold with USG support	275,437	363,832	132%
Houses sprayed with indoor residual spraying with USG support	119,000	139,700	117%

[1] The numbers of insecticide-treated nets and indoor residual spraying are as reported by the implementing partners and were not fully tested during this audit. In the case of insecticide-treated nets, 64 percent of the distribution and 92 percent of the procurement were reported by United Nations Children Fund (UNICEF). The United Nations Office of Internal Oversight is responsible for performing internal audits of United Nations organizations, such as UNICEF.
[2] U.S. Government.
[3] The term "stockout" refers to when a clinic, hospital or similar service delivery point has run out of the specified drugs to treat malaria.

These accomplishments are important, because they each play a key role in preventing and/or treating malaria. For example, the purchase of insecticide-treated nets and the spraying of houses are important because both activities can contribute to preventing the transmission of malaria. Similarly, the purchase of rapid diagnostic test kits and ACT drugs is important because these are key elements in diagnosing and treating malaria.

Other evidence obtained during the audit suggests that USAID/Angola's procurement and distribution of commodities under the PMI are having an impact at a higher level, contributing to the targeted national coverage levels for malaria prevention and treatment, which should also contribute toward achieving the PMI goal of reducing malaria-related mortality by 50 percent by the end of 2010. During our site visits, several health workers, Angolan Government officials, and experts from PMI implementing partners stated that the numbers of severe malaria cases and deaths from confirmed malaria cases since PMI began have declined as a result of improved access to malaria-preventing commodities and improved malaria diagnosis and treatment.

Audit tests—including surprise visits to randomly selected health facilities and independent shops that sell U.S. Government-subsidized insecticide-treated nets—confirmed that the essential malaria commodities (ACTs, rapid diagnostic test kits, insecticide-treated nets, and insecticide and supplies for indoor residual spraying) are reaching the intended beneficiaries, including those at some of the remotest health facilities in the country. In addition, implementing partners and the Angolan Government are helping to build malaria prevention and treatment capacity through training and supervision of the workers at the community health and pharmaceutical commodities storage facilities at the national, provincial, and municipal levels. Moreover, implementing partners are collecting and compiling malaria data from four sentinel sites across Angola into databases that will be available to all of USAID/Angola's partners to help improve PMI implementation.

Nevertheless, despite these accomplishments, USAID/Angola is not effectively tracking its progress toward achieving the highest PMI goal of reducing malaria mortality in Angola. In addition, the persistent diversion of PMI commodities has limited the effectiveness of the program. These issues, as well as the potential overstatement of the incidence of malaria in Angola, are discussed in detail below.

PMI Impact Indicators Not Tracked

Summary. The baselines for the mission's PMI performance indicators were obtained from a Malaria Indicator Survey completed in April 2007. The mission has no subsequent survey data to assist in monitoring its progress toward meeting these indicators and the overall PMI goal. USAID policy states that its managers need accurate, current, and reliable information to make sound programming decisions. Mission officials decided to rely on a multi-indicator cluster survey that would have cast more light on the impact of PMI intervention to date. However, those survey results were not available when anticipated. USAID/Angola needs to know the impact of its PMI interventions to date so that it can adjust its strategies as necessary.

USAID's results-oriented management approach relies on its managers' consideration of performance information when making decisions. Sound decisions require accurate, current, reliable information, and the benefits of USAID's results-oriented approach depend on the quality of the performance information available.[4] Such information includes performance indicators, which are an important element in measuring progress. USAID's Automated Directives System Section 203.3.4 notes that performance indicators are used to observe progress and to measure actual results compared with expected results. Performance indicators help to show whether an operating unit or strategic objective team is progressing toward its objectives.

To achieve its PMI goals, USAID/Angola is working to help the Government of Angola attain the following performance indicators in populations at risk of malaria.

- More than 90 percent of households with a pregnant woman and/or child under age 5 will own one or more insecticide-treated nets.
- 85 percent of children under age 5 will have slept under an insecticide-treated net the previous night.
- 85 percent of pregnant women will have slept under an insecticide-treated net the previous night.
- 85 percent of houses in geographic areas targeted for indoor residual spraying will have been sprayed.
- 85 percent of pregnant women and children under age 5 will have slept under an insecticide-treated net the previous night or in a house that has been protected by indoor residual spraying.
- 85 percent of women (in areas determined to be appropriate for the use of intermittent preventive treatment of pregnant women) who have completed a pregnancy in the last 2 years will have received two or more doses of sulfadoxine-pyrimethamine for intermittent preventive treatment during that pregnancy.
- 85 percent of government health facilities will have ACTs available for the treatment of uncomplicated malaria.
- 85 percent of children under age 5 with suspected malaria will have received treatment with an ACT within 24 hours of the onset of their symptoms.

The baselines for these indicators were obtained from a malaria indicator survey completed in April 2007. According to this survey, significant progress remained to be made, as only 28 percent of households nationwide had owned one or more insecticide-treated nets, and 18 percent of children under age 5 and 20 percent of pregnant women had slept under an insecticide-treated net the night before the survey. Similarly, only 1.5 percent of children under age 5 with fever had been treated with ACT within 24 hours of the onset of illness and only 2.5 percent of pregnant women had received two doses of intermittent preventive treatment.

Unfortunately, the mission had no subsequent data to assist in monitoring its progress toward meeting these performance indicators and the overall PMI goal. Ordinarily the

[4] USAID's "Guidelines for Indicator and Data Quality" (TIPS No. 12).

mission would have arranged for the conduct of an interim malaria indicator survey, but instead mission officials decided to rely on a multi-indicator cluster survey[5] that would have cast more light on the impact of PMI intervention to date. However, those survey results were not available as anticipated.

The expected release date of partial data from this survey was June 15, 2009, but now survey results are not expected to be released until March 2010, primarily because the Government of Angola, which controls the release of the survey results, has not granted permission to release the data. Although PMI helps fund this study through a $400,000 award to UNICEF, its ability to influence the release of this report is limited because its participation is only 4 percent of the $10 million total cost.

According to the mission, the Government of Angola is reluctant to release preliminary survey data. Nevertheless, USAID/Angola needs to know the impact of its PMI interventions to date so that it can adjust its strategies to achieve the PMI goal of reducing malaria-related mortality by 50 percent by the end of 2010.

> ***Recommendation 1.*** *We recommend that USAID/Angola develop and implement a plan with milestones to track progress toward meeting its President's Malaria Initiative impact indicators and the overall President's Malaria Initiative goal of reducing malaria-related mortality by 50 percent.*

Malaria Drugs Persistently Stolen

Summary. Four major thefts of the malaria drug, Coartem, valued at over $642,000, have occurred under PMI in Angola. Two have been at Angolan airports and two at Angomedica, the Government of Angola's central medical storage warehouse. The Government Accountability Office's "Standards for Internal Control in the Federal Government"[6] states that an agency must establish physical control to secure and safeguard vulnerable assets. These thefts occurred because USAID/Angola did not ensure a quick and proper delivery of the drug from the airports and because it relied on a distribution system with significant control weaknesses managed by the Government of Angola. As a result, critical malaria commodities are not reaching their intended beneficiaries, and more Angolans may be unnecessary victims of malaria.

GAO's "Standards for Internal Control in the Federal Government" states that an agency must establish physical control to secure and safeguard vulnerable assets. Nevertheless, four significant thefts of USAID-funded Coartem, the essential malaria curative drug purchased for PMI, have occurred in Angola since January 2008. These thefts occurred twice at airports—Huila Airport in January 2008 and Luanda Airport in June 2008—and twice at the Government of Angola's central medical storage

[5] This survey was sponsored by UNICEF, in cooperation with the Angolan National Institute of Statistics.

[6] General Accounting Office (known as the Government Accountability Office since July 2004), "Standards for Internal Control in the Federal Government" (November 1999).

warehouse, Angomedica, in Luanda.

Thefts at Airports. Significant amounts of Coartem have been stolen at airports. According to mission officials, in the Huila Airport case, a local private delivery agent apparently did not verify delivery of Coartem to the right officials in the province. During the audit, this agent confirmed that the Coartem had been delivered properly to the provincial airport, but the airport officials had refused to accept custody. Nevertheless, the delivery agent left the drugs at the airport storage facility and stated that he had informed Essential Drug Program (EDP) officials about the delivery. Ultimately, 104 cartons of Coartem, valued at $60,930, were stolen, and the delivery agent is being held responsible for the loss by USAID/Angola. USAID/Angola was not informed of the theft until July 2008, even though the original shipment had been delivered to Huila Airport in January 2008.

In the Luanda Airport case, cartons of Coartem were comingled with other airport cargo in a temporary private security company's facility, but they were difficult to identify because they had not been palletized or clearly marked. Further, delivery from the airport to the Angomedica warehouse was delayed at customs by missing duty-exemption certificates. Subsequent delivery to Angomedica was made on 6 different days over a period of 15 days, starting on June 13, 2008. During that period 358 cartons of Coartem, valued at $206,177, were discovered missing.

Thefts at Angomedica. On December 23, 2008, when the EDP staff were performing their regular checks of commodities in the Angomedica warehouse, they discovered that 380 cartons of Coartem, valued at $218,880 were missing. On January 28, 2009, the PMI team was informed by the National Malaria Control Program's staff of the missing drugs. The Angomedica staff reported that on the morning the discovery was made, they had found all doors locked, with no signs of having been forced or opened during the previous night.

Mission officials believe this loss occurred partly because two groups, the Ministry of Health's Essential Drug Program and Angomedica personnel, were both handling storage activities at the warehouse and neither group had been given clearly specified responsibilities. To correct this situation, tighter security and internal controls were established, including eliminating Angomedica employees from the warehouse activities and placing all operations in the hands of Essential Drug Program staff. Other measures included giving control of the keys to the warehouse's special access area to one individual and implementing a new electronic inventory database intended to prevent manual record-keeping errors.

Notwithstanding these and other enhanced control procedures, control weaknesses still exist, as the latest loss, which occurred in May 2009, makes evident. This loss was first noted by Essential Drug Program staff on May 27, 2009, although discussions with Essential Drug Program staff indicate that the loss could have occurred as early as May 15, just 2 days after receipt of a major shipment of Coartem. Although this theft was noted in May 2009, no one from the warehouse notified the police regarding the loss nor did they inform anyone at USAID until June 5, 2009, when USAID contacted Angomedica to make arrangements to visit the warehouse. About 272 cartons (30 pallets or one truckload) of Coartem—130,599 treatments, valued at $156,719—were lost.

The total reported theft of PMI commodities in Angola amounted to over $642,000 since January 2008. The effects of the loss are not simply monetary—more significantly, due to these thefts, the drugs required to relieve the suffering of 534,733 people from malaria were not available for distribution through the PMI program.

Table 2. Thefts of the Malaria Drug Coartem

Date of Theft	Location	Number of Cartons	Number of Treatments	Value
Jan. 2008	Huila Airport	104	49,920	$ 60,930
June 2008	Luanda Airport	358	171,814	206,177
Dec. 2008	Angomedica	380	182,400	218,880
May 2009	Angomedica	272	130,599	156,719
Total	**All locations**	**1,114**	**534,733**	**$ 642,706**

The Ministry of Health and USAID/Angola have agreed verbally that the Ministry of Health is responsible for the custody and distribution logistics of PMI commodities in Angola once they are delivered to Angomedica. While it is not clear who is stealing the drugs, the last two thefts obviously occurred while the drugs were under the control of the Ministry of Health, which is still investigating the problem.

PMI antimalaria drugs stored at a secure area of Angomedica (left) and at Luanda Provincial Warehouse (right). Photos by OIG auditors, June 8–9, 2009.

USAID/Angola is working to address the problem of theft, including experimenting with selling Coartem on the local market through its implementing partner, Mentor. Since the only source of Coartem in Angola has been the Ministry of Health's free distribution program funded by USAID, the mission believes that the availability of the drug in commercial outlets at reasonable prices may reduce the demand that might be causing the thefts.

Nonetheless, the persistent diversion of Coartem, through theft or other causes, casts doubt on whether all critical malaria commodities are reaching their intended beneficiaries. It indicates significant control weaknesses in the distribution system and shows that the distribution plan is not being implemented completely and effectively. As a result, more Angolans may needlessly suffer from malaria because they have no

alternative access to these commodities. To help resolve this problem, this audit makes the following recommendations.

Recommendation 2*. We recommend that USAID/Angola execute a formal written agreement with the Government of Angola to define responsibilities and accountability over President's Malaria Initiative commodities and clarify the means of recourse in the event of loss.*

Recommendation 3. *We recommend that USAID/Angola recover the estimated $642,706 value for the President's Malaria Initiative commodities already lost.*

Recommendation 4. *We recommend that USAID/Angola reassess and document its policy of assigning the storage and distribution of President's Malaria Initiative commodities to the Government of Angola and decide whether it should continue this policy in light of the significant losses experienced to date.*

Recommendation 5. *We recommend that USAID/Angola develop and implement a written plan to minimize the risk of additional losses of President's Malaria Initiative commodities.*

Bed Nets May Also Have Been Diverted

Summary. Bed nets purchased with funding from USAID/Angola for distribution under the PMI program and valued at $14,900 were missing from the Ministry of Health's provincial warehouse in Luanda. GAO's "Standards for Internal Control in the Federal Government" states that transactions should be recorded promptly to maintain their relevance and value to management in controlling operations and making decisions. The warehouse manager explained that some nets had been lent several weeks earlier for a malaria campaign demonstration. However, the warehouse had no record of this loan in the inventory records and did not know whether they would be returned or when. As a result of these weak controls, PMI commodities are more susceptible to theft or loss.

GAO's "Standards for Internal Control in the Federal Government" states that transactions should be recorded promptly to maintain their relevance and value to management in controlling operations and making decisions. In the context of inventory, such controls include the timely and accurate recording of the addition or removal of stock.

During its review of the Luanda provincial warehouse, which is controlled by the Government of Angola's Ministry of Health, the audit team found that USAID-funded insecticide-treated bed nets that had been purchased and distributed for the PMI program were missing. The warehouse stock card indicated that 3,790 nets should have been on hand, but only 2,300 bed nets were stored in the warehouse at the time of our visit and 1,490 nets, valued at approximately $14,900, were missing.

The warehouse supervisor explained that the missing nets had been lent to UNICEF since April 2009 for a World Malaria Day campaign. The warehouse had no record of this loan or any indication of when the nets might be returned to the warehouse.

Bales of mosquito nets at Luanda Provincial Warehouse. Photo by OIG auditors, June 9, 2009.

As a result of these weaknesses in controls, PMI commodities are more susceptible to theft or loss, to the detriment of the intended beneficiaries. We are therefore making the following recommendation to help ensure that insecticide-treated bed nets are not diverted.

> ***Recommendation 6.*** *We recommend that USAID/Angola reassess and document the risk of loss in its current distribution arrangements for mosquito nets including the implementation of additional controls to ensure that the nets reach the intended beneficiaries.*

Malaria Cases May Be Significantly Overstated

Summary. Both analytical and anecdotal evidence suggest that reported malaria cases in Angola may be significantly overstated—by as much as 40 percent, according to one study. Causes include a lack of laboratory resources for confirming suspected malaria cases and issues with rapid diagnostic test kits. The overstatement has several implications, including an unreliable baseline for evaluating antimalaria activities and a waste of public resources for treating individuals who may not have malaria. USAID's policies require managers to establish sound baseline data for properly evaluating results and to design internal control to reduce the risk of wasted resources.

As noted earlier in this report, USAID's results-oriented management approach calls for its managers to consider performance information when making decisions. Sound decisions require accurate, current, and reliable information, and the benefits of USAID's results-oriented approach depend substantially on the quality of the performance information available.[7]

Nevertheless, both analytical and anecdotal evidence indicates that cases of malaria in Angola may be significantly overstated. For example, according to a study[8] of reported malaria patients performed in the Angolan capital of Luanda in March 2008, a very small

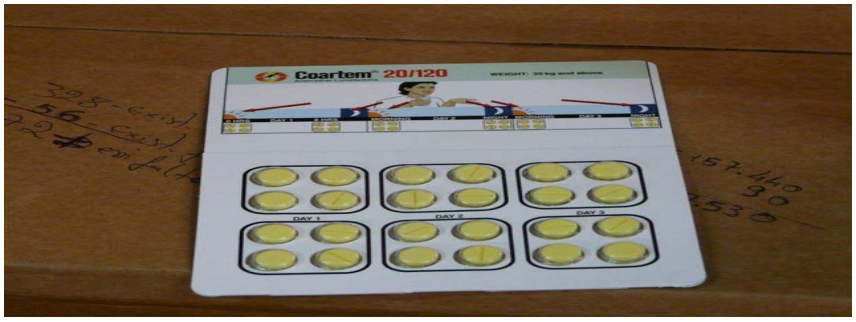
[7] USAID's "Guidelines for Indicator and Data Quality" (TIPS No. 12).
[8] "How Much Malaria Occurs in Urban Luanda, Angola? A Health Facility-Based Assessment," *American Journal of Tropical Medicine and Hygiene*, 2009.

minority of patients with fever at health care facilities actually had the laboratory-confirmed malaria infection, despite the large proportion of patients being diagnosed and treated for the disease. According to the Angola Ministry of Health, Luanda Province accounts for more cases of malaria than any other Angolan province. In this study, only 3.6 percent of the supposed malaria cases actually tested positive. The remaining 96.4 percent did not have laboratory-confirmed malaria.

Corroborating these results was an unpublished study completed nationwide under the auspices of the Government of Angola's National Malaria Control Program. This study concluded that there was a 40 percent false positivity rate nationally for diagnoses made at the health facility level.

Rapid diagnostic test kits and Coartem found at a remote health center in Cassema (left); U.S. Government-subsidized mosquito nets in a Quibala shop (right). Photos by OIG auditors, June 16–17, 2009.

Anecdotal evidence corroborates these conclusions. For example, the manager of the health care facility in the municipality of Sograde in Malanje Province of told us that the clinic had run out of rapid diagnostic tests kits in April 2009. These kits are used to make a malaria diagnosis properly and accurately, rather than a diagnosis based solely on symptoms. During this period, his clinic had 359 suspected cases of malaria, mainly from individuals suffering from malaria symptoms, such as fever. Since they did not have test kits, all 359 individuals were treated as having malaria and were given Coartem. In this case, the unavailability of rapid test kits may have resulted in the overdiagnosis of malaria.



A malaria treatment. Photo by OIG auditors at Angomedica, June 8, 2009.

Other local health care officials also expressed their need for additional rapid diagnostic test kits to assist in properly diagnosing cases of malaria. An official from the Government of Angola's National Malaria Control Program, who worked in the Cuanza Norte provincial health office, stated that there were not enough test kits to meet the demand. In addition to the lack of test kits, another major cause for overstated cases of

malaria is local health care workers' frequent decision to treat individuals for malaria solely on the basis of symptoms, rather than on laboratory tests. In fact, according to the official from Cuanza Norte, even when they do have rapid test kits, many local health care workers do not trust the test kit results. This was confirmed by the manager of the Sograde health care facility mentioned above, who noted that even if rapid diagnostic test results indicated that a person did not have malaria, they would still treat the person as if they had malaria, because health care workers do not trust test kit results.

According to the Luanda survey, one of the causes for the general lack of confidence in rapid diagnostic test kits is the lack of training and experience on the part of health care workers. The Luanda survey states:

> A further assessment to address causes of poor quality of laboratory diagnosis is needed, as are resources for diagnostic supplies and increased training and supervision. Although [rapid diagnostic tests] are available in most health facilities, and in trained hands perform well, there is anecdotal evidence of widespread distrust of negative results, and efforts to improve both laboratory performance of and provider confidence in [rapid diagnostic tests] are needed.[9]

The local health care officials with whom we spoke corroborated this point. USAID/Angola officials stated that, along with Angola's National Malaria Control Program, they procure fewer test kits than malaria treatments because they do not expect that the test kits will be effectively utilized. For example, for the May 2009 shipment, only 600,000 rapid diagnostic test kits were procured, compared with 2 million malaria treatments.

The low prevalence rate of confirmed malaria, even among those with fever, implies that diagnoses of malaria are being overstated. This may result in:

- Significant overuse of ACTs or other antimalarial medications in patients who do not need them.
- Underdiagnosis of other causes of fever, some of which may be life-threatening.
- Significant overstatement of malaria cases in the malaria indicator survey completed in April 2007.

This last point is important because, in the absence of an accurate number for malaria-related deaths at the beginning of the program, the mission would have difficulty determining whether PMI had reduced malaria-related mortality by 50 percent at the end of the program. In fact, if the number of malaria-related deaths at the beginning of the program had been significantly overstated, and the number of such deaths at the middle or the end of the program was accurately measured, the impact of PMI on reducing malaria-related deaths could be vastly overstated.

In response to this challenge, mission officials said that they have worked with the U.S. Centers for Disease Control and Prevention and other stakeholders to (1) develop standardized laboratory training materials and laboratory aids, (2) provide training for laboratory technicians, health care workers, and other clinical technicians, (3) support

[9] The study concluded that more training was needed.

training of health care workers in the laboratory diagnosis of malaria, (4) provide additional rapid diagnostic test kits, microscopes, and microscopy kits, (5) provide provincial laboratory supervisors with training on malaria diagnostic issues, and (6) secure additional test kits.

In light of the steps the mission has taken to address the issue of underuse of laboratory malaria diagnoses, we are not making a recommendation to the mission in this area. However, the mission needs to determine the impact of overdiagnosis of malaria cases on its ability to measure its progress and attainment of PMI's goal of reducing malaria-related mortality by 50 percent. Accordingly, we are making the following recommendations.

Recommendation 7. *We recommend that USAID/Angola determine and document the impact of the overstated cases of malaria on its reporting on achievement of targets for President's Malaria Initiative goals and intermediate results.*

Recommendation 8. *We recommend that USAID/Angola document and implement use of accurate baseline and results data to report on the impact of its Presidential Malaria Initiative activities on the malaria mortality and morbidity rate in Angola.*

EVALUATION OF MANAGEMENT COMMENTS

In its response to our draft report, USAID/Angola agreed with seven of eight recommendations. Although the mission did not agree with the recommendation 8, its planned actions effectively address this recommendation. The mission's comments and our evaluation of those comments are summarized below.

The mission agreed with recommendation 1, which recommended developing and implementing a plan with milestones that the mission could use to track progress toward meeting its President's Malaria Initiative (PMI) impact indicators and the overall PMI goal of reducing malaria-related mortality by 50 percent. Nevertheless, the mission still believes that the multi-indicators cluster survey results will be released by March 2010 and will provide the information needed to track progress in program implementation. In the interim, and to be prepared for continued delays in the publication of the survey, the mission plans to use other sources of information (implementing partners' progress reports, implementing partners' survey results, as well as findings from their field trips) to guide its activities. In light of the mission's response, we consider that a management decision has been reached on this recommendation.

For recommendation 2, regarding executing a formal written agreement with the Government of Angola to define responsibilities and accountability over PMI commodities and clarifying the means of recourse in the event of loss, the mission agreed and planned to draft a formal agreement for U.S. Government clearance by January 31, 2010, and for submission to the Government of Angola by February 28, 2010. In consideration of the mission's response, we consider that a management decision has been reached on this recommendation.

In response to recommendation 3, that USAID/Angola recover the estimated $642,706 for the PMI commodities already lost, the mission agreed with this recommendation and stated that the U.S. Ambassador has already submitted a letter to the Minister of Health requesting replacement of the drugs stolen from the government warehouse. On the basis of the mission's response, we consider that a management decision has been reached on this recommendation.

Recommendation 4 advised USAID/Angola to reassess and document its current policy of assigning the storage and distribution of PMI commodities to the Government of Angola, including a decision regarding the continuation of this policy in light of the significant losses experienced to date. The mission agreed with this recommendation and has determined that all future shipments of PMI antimalaria drugs will bypass the central medical warehouse in Luanda. The mission plans to reassess and document the situation by February 28, 2010, when a determination will be made either to return to using the central warehouse or to continue bypassing it. Accordingly, we consider that a management decision has been reached on this recommendation.

In response to recommendation 5, that USAID/Angola develop and implement a written plan to minimize the risk of additional losses of PMI commodities, the mission agreed

with the recommendation and stated that, on the basis of the final determination in recommendation 4, the mission will then develop and implement such a plan. The mission anticipates that the plan will be documented by March 15, 2010. We consider that a management decision has been reached on this recommendation.

Recommendation 6 advised USAID/Angola to reassess and document the risk of loss in its current distribution arrangements for mosquito nets, including the implementation of additional controls to ensure that the nets reach the intended beneficiaries. The mission agreed with the recommendation and stated that it will increase the level of scrutiny of program descriptions submitted to USAID to ensure appropriate refresher training targeting stock managers in all levels of the proposed distribution system related to long-lasting insecticide-treated nets. We consider that a management decision has been reached on this recommendation.

The mission agreed with recommendation 7, which advised USAID/Angola to determine and document the impact of the overstated cases of malaria on its reporting on achievement of targets for PMI goals and intermediate results. The mission stated that it will rely on information from nationally representative household surveys to track its progress, rather than on the Government of Angola's Health Management Information System. In light of the mission's response, we consider that final action has been taken on this recommendation.

Recommendation 8 advised USAID/Angola to document and implement the use of accurate baseline and results data to report on the impact of its PMI activities on the malaria mortality and morbidity rate in Angola. The mission did not agree with this recommendation and pointed out that the baseline had already been established through the 2006–2007 Malaria Indicator Survey, a nationally representative household survey that was not affected by the health facilities' overdiagnosis of malaria. As mentioned in the discussion of recommendation 7 above, the mission also indicated that it will rely on information from nationally representative household surveys to track its progress, rather than on the Government of Angola's Health Management Information System. Although the mission indicated its disagreement, its confirmation that both baseline data and subsequent results reporting would come from nationally representative surveys meets the requirements of this recommendation. Accordingly, on the basis of the mission's response, we consider that final action has been taken on this recommendation.

Management's comments are included in their entirety in appendix II.

SCOPE AND METHODOLOGY

Scope

The Office of Inspector General conducted this audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions, based on our audit objective. We believe that the evidence obtained provides that reasonable basis. Our audit objective was to determine whether USAID/Angola's procurement and distribution of commodities under the President's Malaria Initiative (PMI) were achieving their main goals of reaching 85 percent coverage of both children under age 5 and pregnant women with proven preventive and therapeutic malaria interventions. In addition, assessment of the program's impact was an integral part of the objective. Audit fieldwork was conducted at USAID/Angola from June 3 to 25, 2009. The audit covered fiscal year (FY) 2008; however, we considered it appropriate to incorporate information pertaining to FY 2009, since this information referred to an ongoing issue affecting FY 2008 as well.

In planning and performing the audit, the audit team made inquiries relating to the respondents' knowledge of actual or suspected fraud in the mission's PMI activities. We assessed management control over the procurement, storage, and distribution of commodities at the level of the mission, implementing partner, and health care provider. We also assessed control over the handling and reporting of commodity losses. We obtained an understanding of and evaluated the Luanda Survey report, "How Much Malaria Occurs in Urban Luanda, Angola? A Health Facility-Based Assessment," published in the *American Journal of Tropical Medicine and Hygiene* in 2009. We also assessed the effectiveness of management controls. Specifically, we obtained an understanding of the following:

- The mission's FY 2008 Malaria Operational Plan
- The mission's FY 2009 Health Performance Management Plan
- The Federal Managers' Financial Integrity Act of 1982[10]
- Implementing partner agreements
- Performance measures and results
- Implementing partner financial reports

We also conducted interviews with key officials of USAID/Angola and the implementing partners. We conducted the audit at USAID/Angola, the offices of implementing partners, Angolan public health care outlets, and Government of Angola warehousing facilities. However, we had only limited access to PMI activities conducted by the United Nations Children's Fund (UNICEF), a major PMI implementing partner in Angola, or to supporting details of data that UNICEF reported to USAID/Angola.

[10] Provisions contained in 31 U.S.C. 3512.

Methodology

To answer the audit objective, we interviewed mission officials to gain an understanding of the mission's PMI activities as well as the key indicators used to measure the contribution of those activities toward meeting mandated targets. We then interviewed the mission's PMI contracting officer's technical representatives to determine how these results were obtained from implementing partners. As part of this process, we gained an understanding of the data used to evaluate the mission's PMI program.

Next, we interviewed implementing partner officials in the city of Luanda and judgmentally selected provinces to gain an understanding of their PMI activities and methods of data collection. We then obtained copies of selected commodity shipping, storing, and receiving documents and traced shipments from the central warehouse in Luanda to provincial warehouses and service delivery points. We also visited public sector warehouses, health care facilities, and service delivery points to evaluate their internal control systems for procurement, distribution, and storage of commodities. We examined shipping, storing, and distribution documentation covering PMI-funded commodities including artemisinin-based combination therapies (ACTs), bed nets, and rapid diagnostic test kits at these locations, which were selected judgmentally on the basis of the amount of time and resources available for conducting these tests. We limited our conclusions resulting from these examinations to the sites selected.

Our assessment of the program's impact was based in part on our interviews with mission and implementing partner staff, health care workers, and Angolan Government officials. In testing output indicators, we verified and reconciled the quantities reported to those indicated on receiving documents for the malaria drugs, and rapid diagnostic test kits. We also confirmed that no Government-assisted service delivery points had experienced stockouts of specific malaria/ACT tracer drugs, through verification of stock cards and interviews of health workers at the judgmentally selected sites we visited. We reconciled the actual numbers reported for mosquito nets and indoor residual spraying to implementing partners' reports but otherwise did not audit those numbers. However, in the case of mosquito nets, 64 percent of the distribution and 92 percent of the procurement were reported by UNICEF. U.N. organizations such as UNICEF are audited by the U.N. Office of Internal Oversight.

Finally, we reviewed documents as part of our audit procedures. These included excerpts from the mission's 2008 Malaria Operational Plan, agreements with selected partners, and their respective scopes of work. We also utilized the World Health Organization's "Standards on Good Pharmaceutical Storage" and USAID's Automated Directives System, chapters 200, 203, and 596, in developing findings under the audit objective.

MANAGEMENT COMMENTS

USAID | ANGOLA
FROM THE AMERICAN PEOPLE

Memorandum

From: Vic Duarte, Acting Mission Director

Date: December 04, 2009

To: Regional Inspector General/ Pretoria, Nathan Lokos

Subject: Audit of USAID/Angola's Procurement and Distribution of Commodities Under the President's Malaria Initiative (Report No. 4-654-09-XXX-P)

This memorandum transmits our response to your memorandum dated October 21, 2009, on the above captioned subject.

This memorandum provides our comments to the eight recommendations and requests concurrence on closure of recommendations No. 1, 6, 7 and 8.

I want to express my sincere appreciation for the thoroughness and professionalism with which this audit was conducted. On the whole, we consider that the team has presented a balanced report.

Annexes:

1. USAID/Angola Comments to Audit Report No. 4-654-09-XXX-P
2. USAID/Angola Suggested Edits to the Report
3. U.S Ambassador's Letter to the Minister of Health in Angola

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REGIONAL INSPECTOR GENERAL OFFICE

USAID/Angola Comments to the Audit Report No. 4-654-09-XXX-P

Audit of USAID/Angola's
Implementation of the President's Malaria Initiative
Audit Report 4-654-09-XXX-P
October 2009

I. Overall Comments

We very much appreciate the thoroughness and professionalism with which this audit was conducted. On the whole, we consider that the team has presented a balanced report with recommendations useful to the program and the Mission.

II. Comments on Recommendations

Recommendation No. 1: *We recommend that USAID/Angola develop and implement a plan with milestones to track progress toward meeting its President's Malaria Initiative impact indicators and the overall President's Malaria Initiative goal of reducing malaria-related mortality by 50 percent.*

Comment/response: We agree with the recommendation. The Mission had from the beginning a solid plan[11] for tracking progress toward meeting impact indicators and the overall goal of reducing malaria-related mortality. The PMI approach is to work with the Government of Angola and all relevant stakeholders to scale-up proven-malaria control interventions in order to achieve the 85% coverage among the vulnerable population at the end of the initiative, in 2010. Each year the Mission sets the following year's milestones for every planned malaria intervention. In the case of the impact indicator, mortality, we did not find it necessary to set annual targets because the mortality rates reported from the standard surveys are an average annual mortality rate over 3- to 5-year periods, rather than a mortality rate for any given year. Therefore, more frequent surveys would essentially be reporting on deaths from overlapping periods of time. In any case it would not be helpful to set targets retrospectively, and with the initiative coming to an end in 2010, the forward looking milestone of 50% reduction in mortality for 2010 is already set.

The delay in the Government of Angola's release of the survey results has created an information gap. However, the Mission still believes that the MICS results will indeed be released by March 2010 and will therefore meet the information needs in order to track progress in program implementation. In the interim and to be prepared for continued delays in the publication of the MICS, our plan is to use other sources of information (implementing partners' progress reports, implementing partners' survey results as well as findings from our field trips) to guide our activities. More specifically:

a. Our indoor residual spraying (IRS) data will come directly from the implementing partner's spray reports of houses sprayed and people protected;

b. Information on coverage on ACTs, RDTs use and IPTp uptake will come from the Global Fund-supported database at the National Malaria Control Program (NMCP) which shows monthly consumption data on ACTs, RDTs and IPTp. This database, allowed us to know that currently PMI-funded ACTs are being used in all Angola's 18 provinces, covering all 164 municipalities nationwide through a network of approximately 1,500 health facilities. When PMI began work in Angola in late 2005, fewer than 90

[11] http://www.pmi.gov/about/mcp/pmi_indicators.pdf

health facilities in about 10 municipalities were implementing these malaria control measures. This database also provides the names of the health facilities involved, which gives us a good sampling frame for planning surprise visits during our site visits. We believe that the auditors saw this database and spoke with the data manager at the NMCP about this progress;

c. The PMI-supported 2006/2007 MIS[12] (the first nationwide household health survey in Angola in more than 25 years) showed that household ownership of one or more ITNs before and after the 2006 combined ITN-measles campaign rose from 11% to 51% in those 7 provinces targeted during the campaign. In addition, recent data from a PMI-funded NGO in Uige Province showed that ITN ownership in Mucaba District rose in less than one year from 8% to 86%; and finally PSI is currently planning a TRaC (Tracking Results Continuously) survey for early 2010, which will provide some insights into coverage on bed net ownership and usage in some provinces.

Our milestones for the above interventions are as follows (by September 30th 2010):

Indicator	FY10 Target
Number of Insecticide Treated Nets purchased with USG funds	270,000
Number of Insecticide Treated Nets distributed or sold with USG funds	216,000
Number of houses sprayed with IRS with USG support	102,000
Number of people trained with USG funds to deliver IRS	649
Percentage of houses targeted for indoor spraying that were sprayed	85
Number of people trained with USG funds in malaria treatment or prevention	4,099
Number of artemisinin-based combination treatments (ACTs) purchased and distributed through USG-support	1,500,000
Number of RDTs purchased and distributed through USG support	450,000
Number of microscopes purchased with USG support	30

In addition, Angola is already scheduled for another Malaria Indicator Survey in 2010 to generate the end of program results. This will probably be at the end of 2010 as these surveys require at least six months of planning and are typically done over the rainy season.

The Mission therefore believes that the final action has been taken and requests that this recommendation be closed on issuance of the report.

Recommendation No. 2: *We recommend that USAID/Angola execute a formal written agreement with the Government of Angola to define responsibilities and accountability over President's Malaria Initiative commodities and clarify the means of recourse in the event of loss.*

Comment/response: We agree with the recommendation. A lack of clarity in terms of

[12] http://www.measuredhs.com/pubs/pdf/MIS2/MIS2.pdf

liability may have contributed to the problem of stolen medications in government-run warehouses. The rationale for the initial design was to avoid constructing parallel systems and thereby strengthen the capacity of current government systems, as well as reduce costs. Our plan is to draft a formal agreement for USG clearance by January 31, 2010 and submit to the Government of Angola by February 28th. We cannot state with certainty that we can 'execute a formal written agreement with the Government of Angola.' A number of factors lie outside of our control, including obtaining the Ambassador's concurrence and convincing the Government of Angola to sign. Drafting the agreement and presenting it to the Ambassador and to the Government of Angola is within our control, which we will complete.

Recommendation No. 3: *We recommend that USAID/Angola recover the estimated $642,706 value for the President's Malaria Initiative commodities already lost.*

Comment/response: We agree with the recommendation. Indeed, the U.S. Ambassador together with the former USAID Mission Director met with the Angolan Minister of Health and raised their concerns about the drug leakage at the central medical stores in Luanda. The Minister then requested the Ambassador to formalize his concerns in writing. In response, the Ambassador submitted a letter (annex 1) to the Minister of Health, requesting a replacement of the drugs that were stolen from the Government warehouse. Since then, the Angolan government has acquired and distributed more than 720,000 ACT treatments worth approximately $864,000. This amount exceeds the $642,706 USG losses in commodities and is well above what the Angolan government would have acquired under normal circumstances in such a short period of time. The Mission will examine the degree of concrete evidence available showing whether this was a replacement of the stolen drugs, evaluate options, and then will take a management decision by February 28, 2010.

Recommendation No. 4: *We recommend that USAID/Angola reassess and document its current policy of assigning the storage and distribution of President's Malaria Initiative commodities to the Government of Angola and include a determination regarding the continuation of this policy in light of the significant losses experienced to date.*

Comment/response: We agree with the recommendation. The Mission initially sought to strengthen existing host country institutions and procedures rather than set up parallel systems which are not thought to be sustainable. For this reason, considerable efforts to date have gone into technical assistance through USG implementing partners to build capacity and strengthen the country's weak pharmaceutical management system at all levels. But given the repeated leakage from the Angolan Government's central warehouse, USAID/Angola revisited and took corrective action with the policy of assigning the storage and distribution of President's Malaria Initiative commodities to the central government warehouse. As the Mission had determined through site visits (verified by the current PMI audit) that there are no significant weaknesses from the provincial medical warehouses to the health facilities, it was decided that all future shipments of antimalarial drugs through PMI will bypass the central medical warehouse in Luanda and be transported to the provincial level, at which point commodities would enter back into the government supply chain for subsequent distribution down to facility level.

This is an interim measure until the problems at the government's central warehouse have been clearly identified and resolved. The Mission will continue with the plan of

bypassing the central warehouse facilities as planned and reassess and document the situation by February 28, 2010, at which time a determination will be documented to either return to using, or continue bypassing, the central warehouse.

Recommendation No. 5: *We recommend that USAID/Angola develop and implement a written plan to minimize the risk of additional losses of President's Malaria Initiative commodities.*

Comment/response: We agree with the recommendation. Based on the final determination in recommendation 4, the Mission will then develop and implement a plan to minimize risk, whether bypassing or coordinating with the central government facilities. This will be documented by March 15, 2010.

Recommendation No. 6: *We recommend that USAID/Angola reassess and document the risk of loss in its current distribution arrangements for mosquito nets including the implementation of additional controls to ensure that the nets reach the intended beneficiaries.*

Comment/response: We agree with the recommendation. The discrepancy between the number of nets shown in the stock card and that found in the physical counting at that medical store may reflect a diversion of nets, or nets that were misplaced, miscounted, or subjected to inaccurate recordkeeping. Therefore, the Mission will increase the level of scrutiny of program descriptions submitted to USAID by Public International Organizations (PIOs) for funding in order to ensure appropriate refresher training targeting stock managers in all levels of the proposed distribution system related to LLINs. Although we cannot specify all controls or scrutinize the implementation of ongoing grant implementation, given the limitations inherent to our relationships with PIOs implementers, in the future the Mission will request an explicit plan from the PIO to address the concerns discovered by the auditors.

The Mission therefore believes that the final action has been taken and requests that this recommendation be closed on issuance of the report.

Recommendation No. 7: *We recommend that USAID/Angola determine and document the impact of the overstated cases of malaria on its reporting on achievement of targets for President's Malaria Initiative goals and intermediate results.*

Comment/response: We agree with this recommendation, although we disagree with the audit conclusions. Indeed, the Mission had already determined from its exploratory assessment that overdiagnosis of malaria was a common problem in health facilities in Angola. Because of this problem with reporting inaccuracy of health facility data, PMI does not rely on information from the Health Management Information System (HMIS) to track its progress as can be seen in the PMI's M&E framework[13]. Instead, PMI relies on nationally-representative household surveys such as MIS, MICS or DHS which gather data from a representative sample from the community. For example in our 2006/2007 baseline survey[14], all children above six months of age but less than 5 years who were eligible to participate in the survey were tested for anemia and malaria in the field. In addition, all women between the ages of 15-49 were tested for anemia, and a

[13] http://www.pmi.gov/about/mcp/pmi_indicators.pdf
[14] http://www.measuredhs.com/pubs/pdf/MIS2/MIS2.pdf

subsample of pregnant women was tested for malaria as well. Fieldworkers used a portable photometer to measure hemoglobin levels and identify anemia in children and women. A malaria rapid diagnostic test (RDT) was used to identify those who were positive for malaria. Since the information we use to track PMI progress does not suffer from the problem of overstatement of malaria cases, our reporting of achievements is not affected by misdiagnosis of malaria. Nevertheless, as well noted in the audit report, the Mission has been investing heavily in improving malaria laboratory diagnosis in health facilities, using microscopy and rapid diagnostic tests and will continue to do so during FY2010, as it can be seen in the Mission's Malaria Operational Plan (MOP)[15].

The Mission therefore believes that the final action has been taken and we request that this recommendation be closed on issuance of the report.

Recommendation No. 8: *We recommend that USAID/Angola document and implement use of accurate baseline and results data to report on the impact of its Presidential Malaria Initiative activities on the malaria mortality and morbidity rate in Angola.*

Comment/response: We do not agree with this recommendation. As explained above, in our response to recommendation No. 7, the PMI baseline has already been established through the 2006/2007 Malaria Indicator Survey[16] (MIS), a nationally-representative household survey that was not affected by the health facilities' overdiagnosis of malaria. The MIS represents the Roll Back Malaria Partnership's internationally-recommended gold standard methodology for assessing core malaria indicators[17-18]. Alternative/equivalent methods include the Multiple Indicator Cluster Survey (MICS) and the Demographic and Health Survey (DHS). PMI uses these methods interchangeably in all 15 countries, including Angola, because they are the best available, cost effective and precise methodologies as opposed to the national Health Management Information Systems (HMIS).

With respect to the MICS results, as stated above, in response to recommendation No. 1, the Mission still believes that the results will indeed be released soon and will therefore meet the information needs in order to track progress in program implementation. In the interim, we will be using other sources of information (implementing partners' progress reports, implementing partners' surveys results as well as findings from our field trips) to guide our activities. In addition, as noted above, Angola is already scheduled for another Malaria Indicator Survey in 2010 that will provide the required end of project status information. The Mission therefore believes that the final action has been taken and we request that this recommendation be closed on issuance of the report.

[15] http://www.fightingmalaria.gov/countries/mops/angola_mop-fy09.pdf
[16] http://www.measuredhs.com/pubs/pdf/MIS2/MIS2.pdf
[17] http://www.rollbackmalaria.org/partnership/wg/wg_monitoring/docs/mis2005/misintro.pdf
[18] http://www.searo.who.int/LinkFiles/Malaria_Indicator_Survey_MalariaSurvey-OverviewMISDoc.pdf

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